

ARTICLE – What effect can measures to dampen the electricity price have on inflation?

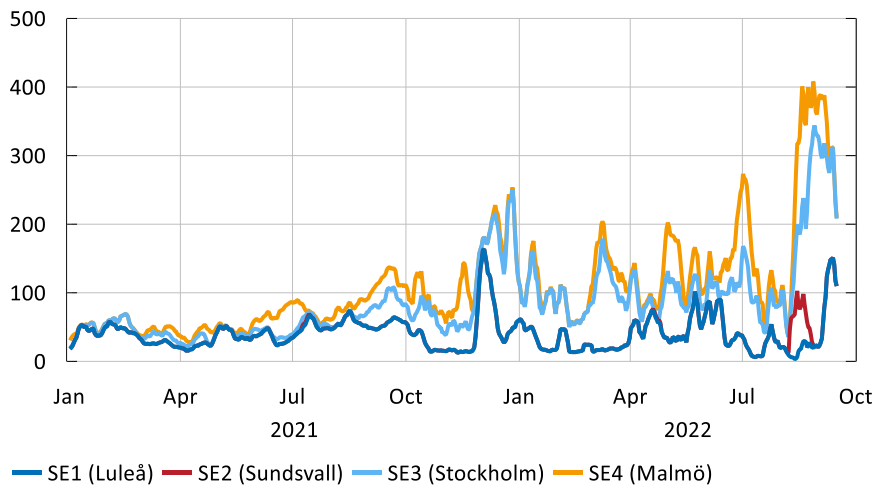
As a result of Russia severely limiting deliveries of natural gas to Europe, the price of natural gas has risen significantly. Because of the way the pricing on the European electricity market functions, this has also pushed up electricity prices to exceptionally high levels in most countries in Europe, including Sweden. Discussions are therefore now underway at EU level on measures to decouple the price of electricity from the price of natural gas to bring down electricity prices. In Sweden and other countries, there are also discussions of various proposals regarding how to protect households and companies from, or compensate for, the high electricity prices. These measures, if they are captured in Statistics Sweden's inflation calculations, can have a significant effect on the CPIF inflation measured.

Why are electricity prices so high?

Electricity prices have risen substantially around Europe in recent months and according to pricing on the electricity forward market, they are expected to continue rising and become exceptionally high during the winter. There are several reasons for this, but the dominant factor is that Russia has severely limited its exports of natural gas to Europe, which has resulted in a substantial rise in the price of natural gas. Natural gas is important for electricity production in many countries in Europe and as the European electricity market is a common one and the countries are interconnected, the high electricity prices is also "imported" to the southern half of Sweden. In the far south, the spot price of electricity was in August almost 4 times as high as it was in August last year, see Figure 41. This is despite electricity production in Sweden in principle not being dependent on natural gas and that electricity is exported from southern Sweden to other countries. However, electricity prices in northern Sweden have so far not been affected in the same way as the southern part of the country.

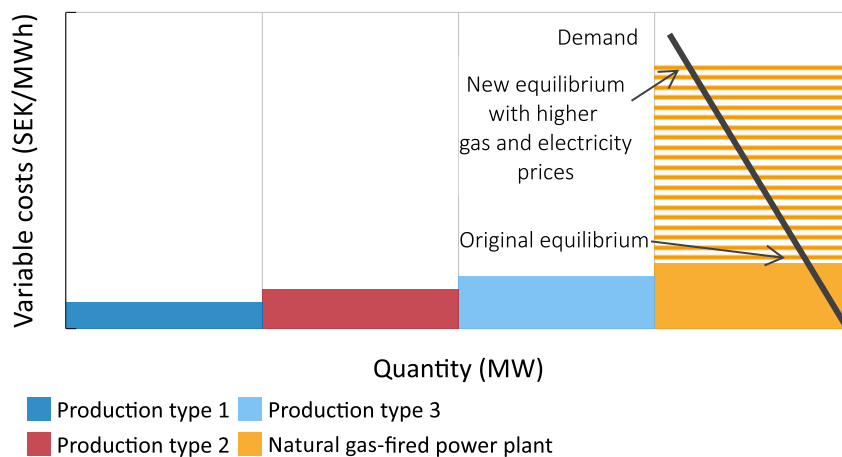
To understand why this is the case we need to understand how the electricity price is determined in the current pricing model. The EU has chosen a system where the marginal cost for the more expensive type of production, which is required to meet the demand for electricity, determines the price. Demand for electricity is not in the short term particularly price sensitive, as it is difficult to radically change one's electricity consumption in the short term. If the price of the most expensive type of production rises substantially, the price of electricity will therefore largely increase to the same extent, even if other types of production have not experienced increased costs, as illustrated in Figure 42.

Figure 41. Spot price of electricity in Sweden’s different electricity areas
EUR/MWh, 7-day moving average



Source: Nordpool.

Figure 42. Illustration of the effect on the electricity price of rising prices for natural gas



Note. The figure illustrates the variable cost of various types of production that together comprise the supply curve for electricity and how it shifts upwards when the gas price rises. Together with a relatively price-insensitive demand curve, this gives a new market equilibrium with somewhat lower electricity use but a much higher price.

Source: The Riksbank.

The European electricity market is divided into different electricity prices areas, which are linked together by electricity cables that can transfer electricity between the areas. If there are no forms of limitations in the transfer capacity between different areas, the electricity price would largely be the same everywhere. As it is often the case that in Europe as a whole the cost of electricity production in natural gas-fired power plants is the most expensive, it is this that would determine the price, disregarding limitations in the transfer capacity. This has become clear now that the price of natural gas has soared. It has led to higher electricity prices not only in areas where natural gas is an important part of electricity production, but also in other

areas, such as southern Sweden, which in principal entirely lack electricity production dependent on natural gas. The reason why northern Sweden has so far not been affected by high electricity prices to the same extent is that these areas have a large surplus of cheap electricity production, in the form of hydroelectric power and wind power, at the same time as the transfer capacity southwards is limited. When it is not possible to transfer more electricity from one area, it becomes in many ways a closed market, and the price is then set on the basis of the production cost on the local market.²¹

Comprehensive measures to reduce electricity prices expected

In many European countries, including Sweden, the electricity price for households and companies is largely following the fluctuations in the wholesale market price for electricity.²² However, in many countries there are also various elements of administratively-set prices. For instance, France has a large element of state-regulated tariffs where the rate of price increase is limited over time. At present, it is set at 4 per cent a year. The United Kingdom also has a system with a ceiling for the average household's annual cost for energy (gas and electricity). This ceiling is revised regularly, but means that rising market prices do not have a direct impact on the prices charged to households.

To alleviate to some extent the effects of the high electricity prices, many countries in Europe, including Sweden, have announced or decided on various types of support to households and companies.²³ For instance, Spain has introduced a ceiling on the price of natural gas, which has brought down electricity prices there, and Germany has launched several support packages aimed at households and companies to a total of EUR 95 billion (corresponding to around 2.5 per cent of GDP).²⁴

At EU level, the Commission is now working on measures to ensure that gas prices have less impact on electricity costs. They have proposed the introduction of a ceiling for surplus income for the companies producing electricity cheaply, rather than with expensive natural gas. This is estimated to enable income of EUR 140 billion for member states that can be used to support households and companies. They are also working on other types of reform that will further reduce the link between the price of electricity and the price of natural gas. The energy ministers from all of the EU member states will discuss the Commission's proposal on 30 September.

²¹ For further information on how the electricity market functions (in Swedish only), see for instance, <https://ei.se/konsument/el/sa-har-fungerar-elmarknaden>.

²² In Sweden, it is possible to fix the price for 1 to 3 years, but then at prices reflected by the wholesale market price.

²³ Many countries, including Sweden, have also launched state loan guarantees aimed at electricity producers that can may experience a shortage of liquid funds as the collateral they need to supply to the central counterparty for trade in electricity derivatives, in Sweden Nasdaq Clearing AB, has increased substantially as a result of the high and volatile electricity prices. These measures are not aimed at affecting the price of electricity, but at guaranteeing stability in the trade in electricity derivatives.

²⁴ For a compilation of measures in different countries, see for instance <https://www.bruegel.org/dataset/national-policies-shield-consumers-rising-energy-prices>.

In Sweden, almost all political parties have provided proposals as to how one can compensate households and companies for the high electricity prices expected this winter. However, many of the details of the proposals are still not clear. Before the election, the then government decided to return SEK 90 billion (around 1.5 per cent of GDP), which was expected to fall due to Svenska kraftnät in the form of capacity charges, to households and companies in 2022 and 2023. The capacity charges arise when there are large bottlenecks in the transfer of electricity and therefore a difference in the price of electricity in different electricity areas. The capacity charge comprises the difference in the price the buyer pays in the electricity area with a high electricity price and the price the producer receives in the electricity area with a lower electricity price. Now that the price difference between in particular southern and northern Sweden is high, at the same time as large amounts of electricity are transferred from north to south, these incomes have become large and are now calculated to total around SEK 90 billion for 2022 and 2023. These incomes are usually small, and intended to be used to strengthen the network and/or reduce network charges, but they are now way in excess of what is needed for these purposes and can therefore be returned to households and companies. It has been decided that Svenska kraftnät will present proposals for a suitable form for this support by 15 November.²⁵ Among other proposals, there is a suggestion for reducing or abolishing energy tax and VAT and introducing a price ceiling for electricity, where the state would stand for a relatively large share of the cost when the price of energy rises above a certain level. Here, too, it can be assumed that a large share of the funding will come from capacity charges from Svenska kraftnät, although other sources of funding have been discussed.

These proposals could, depending on how they are formulated, have a relatively large impact on the price of electricity paid by households and companies. Abolishing VAT, for instance, would reduce the electricity price for households by 20 per cent, all else being equal. However, reducing VAT does not lead to lower costs for companies. The effect of a price ceiling would depend on the price level and how the ceiling was constructed, but can potentially have significantly greater impact on the electricity price than can be attained by solely abolishing VAT. For instance, a proposal that households and companies should only pay 25 per cent of the cost themselves when the spot price of electricity exceeds SEK 1/KWh would reduce the costs by around 25 per cent during the winter, given the current market pricing. The percentage cost reduction will be greater (smaller) if the electricity price rises (falls) and/or the price ceiling is set lower (higher).

What will the effect be on the inflation rate measured?

The electricity price support for winter 2021-2022 was not captured in the inflation statistics, as the support was to a large degree retroactive and not directly linked to

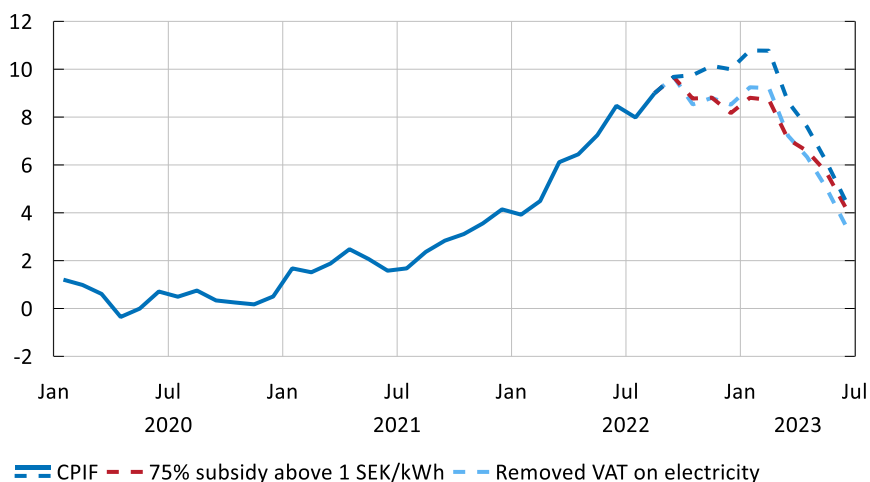
²⁵ More information on the decision can be found here (only in Swedish), <https://www.regeringen.se/regeringsuppdrag/2022/08/uppdrag-att-ansoka-om-att-anvanda-intakter-fran-overbelastning-for-att-finansiera-nodatgarder-for-konsumenter-och-foretag/>.

the price of electricity.²⁶ The way that future support is processed in Statistics Sweden's inflation statistics would depend on when the decision is taken and how the support is designed. If the support is constructed as some form of price-dampening measure, such as lower energy tax, abolished VAT or a price ceiling, it will probably be included in the CPI if the design of the support is known in advance. However, if the support is constructed as an income support, it should not be included. As it is yet unclear how the support will be designed, it has not been taken into account in the Riksbank's forecast.

To illustrate what effect the different proposals could have on inflation, Figure 43 shows two calculations based on VAT being abolished entirely and a price ceiling being introduced where the state stands for 75 per cent of the spot price of electricity above SEK 1/kWh, respectively. These should be regarded as mathematical examples, where the design of the support is not yet known, but they provide an indication of what effects might be expected. The calculations are based on the current forward pricing of electricity, similar to the Riksbank's inflation forecasts, and only capture the direct effect on the CPI from lower electricity prices for households. It is likely that electricity price support can also have indirect effects on inflation, for instance, through companies having lower production costs. But the potential effects are not captured here.

Figure 43. CPIF with various assumptions regarding electricity price support

Annual percentage change



Note. Blue unbroken and broken lines show outcome and forecast for the CPIF. The red broken line shows what the forecast would be if the state, with effect from October, stood for 75 per cent of the cost of a spot price for electricity above SEK 1/kWh. The light blue broken line shows what the forecast would be if VAT on electricity were abolished with effect from October.

Sources: Statistics Sweden and the Riksbank.

²⁶ Read more about the decision in Statistics Sweden's memorandum "Hantering av särskild kompensation för höga elpriser i KPI och relaterade mått" (only in Swedish), which was released in connection with the publication of the CPI figures for January 2022.

Given the current pricing, the example regarding a price ceiling would have the greatest effect on inflation during the winter and reduce CPIF inflation by at most around 2 percentage points. The effect is in both cases dependent on the level of the electricity price and therefore declines during the spring when the electricity price is expected to fall again. If the electricity price were to be higher (lower) than in this scenario, the effect of the electricity price support on measured inflation would be larger (smaller). In this example, the support is implemented as early as October, but regardless of when, the direct effect on the rate of inflation measured for a given month would be the same. For instance, the effect on inflation in January would be independent of whether the support were introduced directly, or whether it was delayed until December.